

**Andrew Hoell**  
Meteorologist  
National Oceanic and Atmospheric Administration  
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## **Professional Positions**

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<b>Meteorologist</b> NOAA Earth System Research Laboratory Physical Sciences Division	2015 – Present Boulder, CO
<b>Assistant Researcher II</b> University of California Santa Barbara	2014 – 2015 Santa Barbara, CA
<b>Postdoctoral Associate Researcher II</b> University of California Santa Barbara	2012 – 2014 Santa Barbara, CA

## **Climate Services and Food Security**

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- Research Lead at NOAA ESRL PSD for Famine Early Warning Systems Network (FEWS NET) Project
- Seasonal Forecast Lead for FEWS NET
- Global Climate Variability Training Lead for FEWS NET Analysts
- Assist Preparation of Global Food Security Alerts for FEWS NET

## **Peer-Reviewed Journal Articles**

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- Shukla, S., J. Roberts, **A. Hoell**, C. C. Funk, F. Robertson, and B. Kirtman (2016), Assessing North American multimodel ensemble (NMME) seasonal forecast skill to assist in the early warning of anomalous hydrometeorological events over East Africa, *Clim Dyn*, 1-17, doi:10.1007/s00382-016-3296-z.
- **Hoell, A.**, M. Hoerling, J. Eischeid, K. Wolter, R. Dole, J. Perlwitz, T. Xu, and L. Cheng (2016), Does El Niño intensity matter for California precipitation?, *Geophysical Research Letters*, 43(2), 819-825, doi:10.1002/2015GL067102.
- **Hoell, A.**, C. Funk, J. Zinke, and L. Harrison (2016), Modulation of the Southern Africa precipitation response to the El Niño Southern Oscillation by the subtropical Indian Ocean Dipole, *Clim Dyn*, 1-12, doi:10.1007/s00382-016-3220-6.
- Gaughan, A. E., C. G. Staub, **A. Hoell**, A. Weaver, and P. R. Waylen (2016), Inter- and Intra-annual precipitation variability and associated relationships to ENSO and the IOD in southern Africa, *International Journal of Climatology*, 36(4), 1643-1656, doi:10.1002/joc.4448.

- Cannon, F., L. M. V. Carvalho, C. Jones, **A. Hoell**, J. Norris, G. N. Kiladis, and A. A. Tahir (2016), The influence of tropical forcing on extreme winter precipitation in the western Himalaya, *Clim Dyn*, 1-20, doi:10.1007/s00382-016-3137-0.
- Zinke, J., **A. Hoell**, J. M. Lough, M. Feng, A. J. Kuret, H. Clarke, V. Ricca, K. Rankenburg, and M. T. McCulloch (2015), Coral record of southeast Indian Ocean marine heatwaves with intensified Western Pacific temperature gradient, *Nature Communications*, 6, 8562, doi:10.1038/ncomms9562
- **Hoell, A.**, S. Shukla, M. Barlow, F. Cannon, C. Kelley, and C. Funk (2015), The Forcing of Monthly Precipitation Variability over Southwest Asia during the Boreal Cold Season, *Journal of Climate*, 28(18), 7038-7056, doi:10.1175/JCLI-D-14-00757.1.
- **Hoell, A.**, C. Funk, T. Magadzire, J. Zinke, and G. Husak (2015), El Niño–Southern Oscillation diversity and Southern Africa teleconnections during Austral Summer, *Clim Dyn*, 45(5), 1583-1599, doi:10.1007/s00382-014-2414-z.
- Funk, C. C., and **A. Hoell** (2015), The Leading Mode of Observed and CMIP5 ENSO-Residual Sea Surface Temperatures and Associated Changes in Indo-Pacific Climate, *Journal of Climate*, 28(11), 4309-4329, doi:10.1175/JCLI-D-14-00334.1.
- Funk, C., S. Shukla, **A. Hoell**, and B. Livneh (2015), Assessing the Contributions of East African and West Pacific Warming to the 2014 Boreal Spring East African Drought in Explaining Extreme Events of 2014 from a Climate Perspective, edited, pp. S77-S82, *Bulletin of the American Meteorological Society*.
- Funk, C., et al. (2015), The climate hazards infrared precipitation with stations—a new environmental record for monitoring extremes, *Scientific Data*, 2, 150066, doi:10.1038/sdata.2015.66.
- Barlow, M., B. Zaitchik, S. Paz, E. Black, J. Evans, and **A. Hoell** (2015), A Review of Drought in the Middle East and Southwest Asia, *Journal of Climate*, doi:10.1175/JCLI-D-13-00692.1.
- Barlow, M., and **A. Hoell** (2015), Drought in the Middle East and Central-Southwest Asia During Winter 2013/2014, in *Explaining Extreme Events of 2014 from a Climate Perspective*, edited, pp. S71-S74, *Bulletin of the American Meteorological Society*.
- Shukla, S., C. Funk, and **A. Hoell** (2014), Using constructed analogs to improve the skill of National Multi-Model Ensemble March–April–May precipitation forecasts in equatorial East Africa, *Environmental Research Letters*, 9(9), 094009.
- **Hoell, A.**, C. Funk, and M. Barlow (2014), The Forcing of Southwestern Asia Teleconnections by Low-Frequency Sea Surface Temperature Variability during Boreal Winter, *Journal of Climate*, 28(4), 1511-1526, doi:10.1175/JCLI-D-14-00344.1.
- **Hoell, A.**, C. Funk, and M. Barlow (2014), La Niña diversity and Northwest Indian Ocean Rim teleconnections, *Clim Dyn*, 43(9), 2707-2724, doi:10.1007/s00382-014-2083-y.
- **Hoell, A.**, C. Funk, and M. Barlow (2014), The regional forcing of Northern hemisphere drought during recent warm tropical west Pacific Ocean La Niña events, *Clim Dyn*, 42(11), 3289-3311, doi:10.1007/s00382-013-1799-4.
- **Hoell, A.**, and C. Funk (2014), Indo-Pacific sea surface temperature influences on failed consecutive rainy seasons over eastern Africa, *Clim Dyn*, 43(5), 1645-1660, doi:10.1007/s00382-013-1991-6.
- **Hoell, A.**, M. Barlow, M. C. Wheeler, and C. Funk (2014), Disruptions of El Niño–Southern Oscillation Teleconnections by the Madden–Julian Oscillation, *Geophysical Research Letters*, 41(3), 998-1004, doi:10.1002/2013GL058648.

- Funk, C., **A. Hoell**, and D. Stone (2014), Examining the Contribution of the Observed Global Warming Trend to the California Droughts of 2012/13 and 2013/14, in Bulletin of the American Meteorological Society, edited, pp. S11-S15.
- Funk, C., **A. Hoell**, S. Shukla, I. Bladé, B. Liebmann, J. B. Roberts, F. R. Robertson, and G. Husak (2014), Predicting East African spring droughts using Pacific and Indian Ocean sea surface temperature indices, Hydrol. Earth Syst. Sci., 18(12), 4965-4978, doi:10.5194/hess-18-4965-2014.
- Saini, R., M. Barlow, and **A. Hoell** (2013), Is the North American monsoon self-limiting?, Geophysical Research Letters, 40(16), 4442-4447, doi:10.1002/grl.50801.
- **Hoell, A.**, and C. Funk (2013), The ENSO-Related West Pacific Sea Surface Temperature Gradient, Journal of Climate, 26(23), 9545-9562, doi:10.1175/JCLI-D-12-00344.1.
- **Hoell, A.**, M. Barlow, and R. Saini (2013), Intraseasonal and Seasonal-to-Interannual Indian Ocean Convection and Hemispheric Teleconnections, Journal of Climate, 26(22), 8850-8867, doi:10.1175/JCLI-D-12-00306.1.
- Funk, C., et al. (2013), Attribution of 2012 and 2012-2013 Rainfall Deficits in Eastern Kenya and Southern Somalia in Explaining Extreme Events of 2012 from a Climate Perspective, edited, pp. S45-S48.
- **Hoell, A.**, M. Barlow, and R. Saini (2012), The Leading Pattern of Intraseasonal and Interannual Indian Ocean Precipitation Variability and Its Relationship with Asian Circulation during the Boreal Cold Season, Journal of Climate, 25(21), 7509-7526, doi:10.1175/JCLI-D-11-00572.1.
- Saini, R., M. Barlow, and **A. Hoell** (2011), Dynamics and Thermodynamics of the Regional Response to the Indian Monsoon Onset, Journal of Climate, 24(22), 5879-5886, doi:10.1175/2011JCLI3928.1.
- Funk, C., M. D. Dettinger, J. C. Michaelsen, J. P. Verdin, M. E. Brown, M. Barlow, and **A. Hoell** (2008), Warming of the Indian Ocean threatens eastern and southern African food security but could be mitigated by agricultural development, Proceedings of the National Academy of Sciences, 105(32), 11081-11086.
- Barlow, M., **A. Hoell**, and F. Colby (2007), Examining the wintertime response to tropical convection over the Indian Ocean by modifying convective heating in a full atmospheric model, Geophysical Research Letters, 34(19), n/a-n/a, doi:10.1029/2007GL030043.

### Peer-Reviewed Book Chapters

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- **Hoell, A.**, C. Funk, M. Barlow and F. Cannon, 2016: The Blueprint for Extreme Drought Over Southwest Asia, [in "Climate Extremes: Patterns and Mechanisms"], AGU Monograph, Eds. S.-Y. Wang, Jin-Ho Yoon, Chris Funk and R.R. Gillies
- Funk, C. and **A. Hoell**, 2015: Recent Climate Extremes Associated with the West Pacific Warming Mode, [in "Climate Extremes: Patterns and Mechanisms"], AGU Monograph, Eds. S.-Y. Wang, Jin-Ho Yoon, Chris Funk and R.R. Gillies
- **Hoell, A.**, C. Funk, M. Barlow and S. Shukla, 2015: Recent and Possible Future Variations in the North American Monsoon, [in "The Monsoons and Climate Change: observations and modeling"], Springer, Eds. L. Carvahlo and C. Jones.

## Peer Reviewed Journal Articles and Book Chapters Under Consideration

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- **Hoell, A.**, M. Barlow and F. Cannon: Oceanic Origins of Southwest Asia Precipitation During the Boreal Cold Season, *Journal of Climate*
- **Hoell, A.**, M. Hoerling, C. Funk, J. Eischeid, Quan Xiao-Wei and Brant Liebmann: Reconciling Theories for Human and Natural Attribution of Recent East Africa Drying, *Journal of Climate*

## Invited Presentations and Lectures

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- **Hoell, A.**, 2016: Climate Projections and Energy Security. 6<sup>th</sup> Forum on the Climate-Energy Security Nexus, Ottawa, ON, Canada.
- **Hoell, A.** et al., 2016: Does El Nino Intensity Matter for California Precipitation? National Weather Service Western Region Meteorologists in Charge, Salt Lake City, Utah.
- **Hoell, A.**, 2016: El Nino and the West. Western Water Seasonal Forecast Workshop. Salt Lake City, Utah
- **Hoell, A.** et al., 2015: Drought Tools, Monitoring, Interpretation and Diagnostics. Data Requirements to Address the WCRP Grand Challenges on Weather and Climate Extremes, Sydney, Australia.
- **Hoell, A.** et al., 2014: Famine Early Warning Systems Network Monthly Forecast Review for Food Security Analysts. International Conference on Climate Services, Montevideo, Uruguay.
- **Hoell, A.** et al., 2014: The Famine Early Warning Systems Network Web Tools, Data and Seasonal Forecasts. APCC Workshop on Application of Seasonal Forecasts for the Agricultural Sector, Busan, South Korea
- **Hoell, A.** et al., 2014: Drought Prediction and Science at Multiple Time-Scales, APEC Climate Symposium 2013, Dakar, Indonesia.
- **Hoell, A.** et al., 2012: Tropical Dynamics Panelist, Climate Dynamics of Tropical Africa Workshop, Johns Hopkins University.

## Abridged Lead Author Presentations

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- **Hoell, A.**, 2016: El Nino and North American Climate. NOAA Climate Program Office, Silver Spring, Maryland
- **Hoell, A.** et al., 2016: Reconciling the Effect of Indo-Pacific Sea Surface Temperatures on East Africa Climate. Climate Prediction Center, College Park, Maryland.
- **Hoell, A.** and J. Verdin, 2016: Agro-climatological Support of International Food Security Assessments by the Famine Early Warning Systems Network. 28<sup>th</sup> Conference on Climate Variability and Change, New Orleans, LA
- **Hoell, A.**, C. Funk, B. Lyon, M. Hoerling and B. Liebmann, 2016: Did Similar Sea Surface Temperature Patterns Force the Recent Dry Long Rains and Wet Short Rains Over East Africa?, 28<sup>th</sup> Conference on Climate Variability and Change, New Orleans, LA

- **Hoell, A.,** M. Barlow, C. Funk and F. Cannon, 2015: A Physical Model for Extreme Drought Over Southwest Asia. AGU Fall Meeting, San Francisco, CA
- **Hoell, A.,** M. Hoerling, J. Eischeid, K. Wolter, R. Dole, J. Perlwitz, T. Xu, and L. Cheng, 2014: Does El Niño intensity matter for California precipitation? 40<sup>th</sup> Climate Diagnostics Workshop, Denver, CO
- **Hoell, A.,** C. Funk and M. Barlow, 2015: The Potential Predictability of Sub-Monthly Variability over the Northwest Indian Ocean Rim Using the Madden Julian Oscillation, 27<sup>th</sup> Conference on Climate Variability and Change, Phoenix, AZ
- **Hoell, A.** and C. Funk, 2015: Decadal and Multi-decadal Contributions to the Anomalous Zonal Tropical Pacific Temperature Gradient, 27<sup>th</sup> Conference on Climate Variability and Change, Phoenix, AZ
- **Hoell, A.,** S. Shukla, C. Funk and M. Barlow, 2014: A Decade of Drought: Southwest Asia During the 2000s, AGU Fall Meeting, San Francisco, CA
- **Hoell, A.,** C. Funk and M. Barlow, 2014: The Regional Forcing of Northern Hemisphere Drought During Recent Warm Tropical West Pacific Ocean La Niña Events, 26<sup>th</sup> Conference on Climate Variability and Change, Atlanta, GA
- **Hoell, A.** and C. Funk, 2014: Seasonal Indian Ocean Rim Drought in the Absence of La Niña and the Indian Ocean Dipole, 26<sup>th</sup> Conference on Climate Variability and Change, Atlanta, GA
- **Hoell, A.** and C. Funk, 2013: Indo-Pacific Sea Surface Temperature Influences on Failed Consecutive Rainy Seasons over Eastern Africa, AGU Fall Meeting, San Francisco, CA
- **Hoell, A.** and M. Barlow, 2013: Disruptions of ENSO Teleconnections by the MJO. 25<sup>th</sup> Conference on Climate Variability and Change, Austin, TX.
- **Hoell, A.** and C. Funk, 2013: The Anomalous Circulation Associated with the ENSO-related West Pacific Sea Surface Temperature Gradient. 25<sup>th</sup> Conference on Climate Variability and Change, Austin, TX.
- **Hoell, A.** and M. Barlow, 2011: The 1998-2002 United States Drought and its Links to Global Sea Surface Temperatures. WCRP Open Science Conference, Denver, Colorado
- **Hoell, A.** and M. Barlow, 2011: The leading mode of Indian Ocean convection during the boreal cold season and associated circulation variability. 23<sup>rd</sup> Conference on Climate Variability and Change, Seattle, Washington
- **Hoell, A.** and M. Barlow, 2011: SST links of the 1998-2002 Northern Hemisphere drought. 25<sup>th</sup> Conference on Hydrology, Seattle, Washington
- **Hoell, A.** and M. Barlow, 2010: The influence of Indian Ocean convection on cold season Central-Southwest Asian precipitation extremes. 22<sup>nd</sup> Conference on Climate Variability and Change, Atlanta, Georgia.
- **Hoell, A.** and M. Barlow, 2009: The relationship between eastern Indian Ocean Convection and cold season Asian precipitation. EGU General Assembly, Vienna, Austria.
- **Hoell, A.** and M. Barlow, 2009: The influence of Indian Ocean convection on cold season Asian precipitation. Water Resources in Developing Countries: Planning and Management in a Climate Change Scenario. International Centre for Theoretical Physics, Trieste, Italy.
- **Hoell, A.** and M. Barlow, 2008: The influence of eastern Indian Ocean convection on wintertime Asian precipitation. AGU Fall Meeting, San Francisco, CA.

- **Hoell, A.** and M. Barlow, 2008: Tropical influences on southwest Asia precipitation in a global atmospheric model. 20th Conference on Climate Variability and Change, New Orleans, LA.
- **Hoell, A.** and M. Barlow, 2007: Examining the MJO influence on Asian precipitation by modifying heating with a full atmospheric model. MJO Workshop: New Approaches to Meet the Challenges of the Madden-Julian Oscillation, National Academy of Sciences, Irvine, CA.
- **Hoell, A.** and M. Barlow, 2007: Tropical influences on southwest Asia in a global climate model. 2007 Community Climate System Model Workshop, Breckenridge, CO.

### Academic and Community Service

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- Associate Editor, Journal of Climate, 2016 – present
- NOAA 2016 El Nino Rapid Response Field Campaign
  - On board scientist for flights exploring tropical convection
  - Prepared forecast briefings for flight teams
- Conference Session Convener
  - Subseasonal variability: Spatiotemporal structure in the troposphere (and stratosphere); link with the teleconnection patterns and the MJO; dynamical and thermodynamic mechanisms; hydroclimate impacts; potential predictability; representation in climate simulations; 27<sup>th</sup> Conference on Climate Variability and Change, Phoenix, Arizona
  - The Emerging Science of Climate Attribution, Detection, and Trend Analysis, AGU Fall Meeting, San Francisco, California
  - Building and Delivering Early Warning Systems, International Conference on Climate Services, Montevideo, Uruguay
- Journal Referee:
  - Journal of Climate, Monthly Weather Review, Environmental Research Letters, Atmospheric Science Letters, Bulletin of the American Meteorological Society, International Journal of Climatology, Atmospheric Research, Geophysical Research Letters, Climate Dynamics, Journal of Applied Meteorology and Climatology, Earth Science Informatics, Weather and Forecasting, Journal of Geophysical Research, Nature, Nature Communications
- Presentation to children for My Brother's Keeper during National Lab Week

### Spotlights and Media

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- American Geophysical Union Research Spotlight for *Does El Nino Intensity Matter for California precipitation?*
- NPR Science Friday on February 19, 2016 to Discuss El Nino

## Education

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<b>Ph.D. in Marine Science</b> University of Massachusetts Lowell	February 2012
<b>M.S. in Marine Science</b> University of Massachusetts Lowell	February 2010
<b>M.S. in Atmospheric Science</b> University of Massachusetts Lowell	June 2007
<b>B.S. in Meteorology</b> University of Massachusetts Lowell	June 2005